

What is claimed is:

1. A sustained release drug delivery system comprising  
an inner drug core comprising an amount of an antiviral agent,  
an inner tube impermeable to the passage of said agent, said inner tube having first and second ends and covering at least a portion of said inner drug core, said inner tube being dimensionally stable,  
an impermeable member positioned at said inner tube first end, said impermeable member preventing passage of said agent out of said drug core through said inner tube first end, and  
a permeable member positioned at said inner tube second end, said permeable member allowing diffusion of said agent from said drug core through said inner tube second end.
2. A sustained release drug delivery system comprising  
a drug core comprising an amount of an antiviral agent,  
a first polymer coating permeable to the passage of said agent, and  
a second polymer coating impermeable to the passage of said agent,  
wherein the second polymer coating covers a portion of the surface area of the drug core and/or the first polymer coating.
3. A sustained release drug delivery system comprising  
a drug core comprising an amount of an antiviral agent,  
a first polymer coating and a second polymer coating permeable to the passage of said agent,  
wherein the two polymer coatings are bioerodible and erode at different rates.
4. A sustained release drug delivery system comprising  
a drug core comprising an amount of an antiviral agent,  
a first polymer coating permeable to the passage of said agent covering at least a portion of the drug core,  
a second polymer coating essentially impermeable to the passage of said agent covering at least a portion of the drug core or the first polymer coating,

and a third polymer coating permeable to the passage of said agent essentially completely covering the drug core and the second polymer coating,  
wherein a dose of said agent is released for at least 7 days.

5. A sustained release drug delivery system comprising  
a drug core comprising an amount of an antiviral agent,  
a first polymer coating permeable to the passage of said agent covering at least a portion of the drug core,  
a second polymer coating essentially impermeable to the passage of said agent covering at least a portion of the drug core or the first polymer coating,  
and a third polymer coating permeable to the passage of said agent essentially completely covering the drug core and the second polymer coating,  
wherein release of said agent maintains a desired concentration of said agent in blood plasma for at least 7 days.

6. A sustained release drug delivery system comprising  
a drug core comprising an amount of an antiviral agent, and  
a non-erodible polymer coating, the polymer coating being permeable to the passage of said agent covering the drug core and is essentially non-release rate limiting,  
wherein a dose of said agent is released for at least 7 days.

7. A sustained release drug delivery system comprising  
a drug core comprising an amount of an antiviral agent, and  
a non-erodible polymer coating, the polymer coating being permeable to the passage of said agent covering the drug core and is essentially non-release rate limiting,  
wherein release of said agent maintains a desired concentration of said agent in blood plasma for at least 7 days.

8. A sustained release drug delivery system comprising  
a drug core comprising an amount of an antiviral agent,  
a first polymer coating permeable to the passage of said agent covering at least a portion of the drug core,

a second polymer coating essentially impermeable to the passage of said agent covering at least 50% of the drug core and/or the first polymer coating, said second polymer coating comprises an impermeable film and at least one impermeable disc, and

a third polymer coating permeable to the passage of said agent essentially completely covering the drug core, the uncoated portion of the first polymer coating, and the second polymer coating,

wherein a dose of said agent is released for at least 7 days.

9. A sustained release drug delivery system comprising  
a drug core comprising an amount of an antiviral agent,  
a first polymer coating permeable to the passage of said agent covering at least a portion of the drug core,

a second polymer coating essentially impermeable to the passage of said agent covering at least 50% of the drug core and/or the first polymer coating, said second polymer coating comprises an impermeable film and at least one impermeable disc, and

a third polymer coating permeable to the passage of said agent essentially completely covering the drug core, the uncoated portion of the first polymer coating, and the second polymer coating,

wherein release of said agent maintains a desired concentration of said agent in blood plasma for at least 7 days.

10. A method for treating or reducing the risk of retroviral or lentiviral infection comprising implanting a sustained release drug delivery system including an antiviral agent in a patient in need of treatment wherein a dose of said agent is released for at least 7 days.

11. A method for treating or reducing the risk of retroviral or lentiviral infection comprising implanting a sustained release drug delivery system including an antiviral agent in a patient in need of treatment wherein release of said agent maintains a desired concentration of said agent in blood plasma for at least 7 days.

12. The system according to claim 1, wherein the system reduces the risk of mother to child transmission of viral infections.

13. The system according to claim 1, wherein the system treats or reduces the risk of retroviral or lentiviral infection.

14. The system according to claim 13, wherein the retroviral or lentiviral infections include HIV, Bowenoid Papulosis, Chickenpox, Childhood HIV Disease, Human Cowpox, Hepatitis C, Dengue, Enteroviral, Epidermodysplasia Verruciformis, Erythema Infectiosum (Fifth Disease), Giant Condylomata Acuminata of Buschke and Lowenstein, Hand-Foot-and-Mouth Disease, Herpes Simplex, Herpes Virus 6, Herpes Zoster, Kaposi Varicelliform Eruption, Rubeola Measles, Milker's Nodules, Molluscum Contagiosum, Monkeypox, Orf, Roseola Infantum, Rubella, Smallpox, Viral Hemorrhagic Fevers, Genital Warts, and Nongenital Warts.

15. The system according to claim 1, wherein the antiviral agent is selected from azidouridine, anasmycin, amantadine, bromovinyldeoxysidine, chlorovinyldeoxysidine, cytarabine, didanosine, deoxynojirmycin, dideoxycytidine, dideoxyinosine, dideoxynucleoside, desciclovir, deoxyacyclovir, edoxuidine, enviroxime, fialuridine, foscarnet, fialuridine, fluorothymidine, fluxuridine, hypericin, interferon, interleukin, isethionate, nevirapine, pentamidine, ribavirin, rimantadine, stavudine, sargramostin, suramin, trichosanthin, tribromothymidine, trichlorothymidine, vidarabine, zidoviridine, zalcitabine, and 3-azido-3-deoxythymidine, and pharmaceutically acceptable salts, analogs, prodrugs or codrugs thereof.

16. The system according to claim 1, wherein the antiviral agent is selected from nevirapine, delavirdine, and efavirenz, and pharmaceutically acceptable salts, analogs, prodrugs or codrugs thereof.

17. The system according to claim 1, wherein the antiviral agent is nevirapine, or a pharmaceutically acceptable salt, analog, prodrug, or codrug thereof.

18. The system according to claim 1, wherein the antiviral agent is selected from 2',3'-dideoxyadenosine (ddA), 2',3'-dideoxyguanosin (ddG), 2',3'-dideoxycytidine (ddC), 2',3'-dideoxythymidine (ddT), 2',3'-dideoxy-dideoxythymidine (d4T), 2'-deoxy-3'-thia-cytosine (3TC or lamivudine), 2',3'-dideoxy-2'-fluoroadenosine, 2',3'-dideoxy-2'-fluoroinosine, 2',3'-dideoxy-2'-fluorothymidine, 2',3'-dideoxy-2'-fluorocytosine, 2',3'-dideoxy-2',3'-didehydro-2'-fluorothymidine (Fd4T), 2',3'-dideoxy-2'-beta-fluoroadenosine (F-ddA), 2',3'-dideoxy-2'-beta-fluoro-inosine (F-ddI), and 2',3'-dideoxy-2'-beta-fluorocytosine (F-ddC), and pharmaceutically acceptable salts, analogs, prodrugs or codrugs thereof.

19. The system according to claim 1, wherein the antiviral agent is selected from trisodium phosphomonoformate, ganciclovir, trifluorothymidine, acyclovir, 3'azido-3'thymidine (AZT), dideoxyinosine (ddI), and idoxuridine, and pharmaceutically acceptable salts, analogs, prodrugs or codrugs thereof.

20. The system according to claim 1, wherein the release of said agent has a systemic effect.

21. The system according to claim 1, wherein the release of said agent has a local effect.

22. The system according to claim 1, wherein the amount or dose of agent released from the drug delivery system may be a therapeutically effective or a sub-therapeutically effective amount.

23. The system according to claim 1, wherein the amount of the agent within the drug core or reservoir is at least 1 mg to about 500 mg.

24. The system according to claim 1, wherein the amount of the agent within the drug core or reservoir is at least about 2 mg to about 15 mg.

25. The system according to claim 1, wherein a therapeutically effective amount or dose of the agent is released for at least two weeks.

26. The system according to claim 1, wherein a therapeutically effective dose is at least about 30 ng/day, 100 ng/day, or 100 µg/day.

27. The system according to claim 1, wherein the desired concentration of said agent in blood plasma is about 20-100 ng/ml.

28. The system according to claim 1, wherein the system is between about 1 to 30 mm in length.

29. The system according to claim 1, wherein the system is between about 0.5 to 5 mm in diameter.

30. The system according to claim 1, wherein the permeable member comprises a material selected from cross-linked polyvinyl alcohol, polyolefins, polyvinyl chlorides, cross-linked gelatins, insoluble and nonerodible cellulose, acylated cellulose, esterified celluloses, cellulose acetate propionate, cellulose acetate butyrate, cellulose acetate phthalate, cellulose acetate diethyl-aminoacetate, polyurethanes, polycarbonates, and microporous polymers formed by co-precipitation of a polycation and a polyanion modified insoluble collagen.

31. The system according to claim 1, wherein the permeable member comprises cross-linked polyvinyl alcohol.

32. The system according to claim 1, wherein the impermeable member comprises a material selected from polyvinyl acetate, cross-linked polyvinyl butyrate, ethylene ethylacrylate copolymer, polyethyl hexylacrylate, polyvinyl chloride, polyvinyl acetals, plasticized ethylene vinylacetate copolymer, polyvinyl acetate, ethylene vinylchloride copolymer, polyvinyl esters, polyvinylbutyrate, polyvinylformal, polyamides, polymethylmethacrylate, polybutylmethacrylate, plasticized polyvinyl chloride, plasticized nylon, plasticized soft nylon, plasticized polyethylene terephthalate, natural rubber, polyisoprene, polyisobutylene, polybutadiene, polyethylene, polytetrafluoroethylene, polyvinylidene chloride, polyacrylonitrile, cross-linked polyvinylpyrrolidone, polytrifluorochloroethylene, chlorinated polyethylene, poly(1,4'-isopropylidene diphenylene carbonate), vinylidene chloride,

acrylonitrile copolymer, vinyl chloride-diethyl fumeral copolymer, silicone rubbers, medical grade polydimethylsiloxanes, ethylene-propylene rubber, silicone-carbonate copolymers, vinylidene chloride-vinyl chloride copolymer, vinyl chloride-acrylonitrile copolymer and vinylidene chloride-acrylonitrile copolymer.

33. The system according to claim 32, wherein the impermeable member or the inner tube comprises silicone.
34. The system according to claim 32, wherein the impermeable member is a tube.
35. The system according to claim 32, wherein the tube includes one or more pores.
36. The system according to claim 1, wherein the drug core comprises a pharmaceutically acceptable carrier.
37. The system according to claim 1, wherein the drug core comprises 0.1 to 100% drug, 0.1 to 10% magnesium stearate, and 0.1 to 10% polyethylene glycol.
38. A pharmaceutical package including one or more antiviral compounds formulated for sustained release, and associated with instructions or a label for use in infants who are at risk of maternal transmission of virus.